

20638

15.9207 2209 also 1043, 1143, 1138 S/020/61/36/006/014/021
B*03/B203

11.2210

AUTHORS: Kershak, V. V., Corresponding Member AS USSR, Kasatobain, M.,
Sladkov, A. M., Kudryavtsev, Yu. P., and Uselcayev, K.

TITLE: Synthesis and properties of polyacetylene

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 6, 1961, 1342-1344

TEXT: The authors produced polyacetylene (PA) and studied its chemical structure and physical properties. They assumed that PA formed in the oxidation of bis-acetylene acetylenides of the type $HC \equiv C - (CH_2)_n - C \equiv CH$ which are said to be among the polymeric products not yet studied. They had already suggested a formation mechanism of PA in Ref. 3. In the present investigation, they produced the required acetylenide by passing acetylene through the ammoniacal solution of a salt of bivalent copper. Subsequently, the acetylenide was oxidized by an aqueous solution of potassium ferricyanide at boiling temperature. The authors assumed that the resulting black powder (containing 98% of C) was a mixture of polymer homologs of polyacetylene. On the basis of the temperature-dependent weight losses

Card 1/5

2000

X

S/020/61/136/006/014/024
B103/B203

Synthesis and properties of...

(Fig. 1) and the electron paramagnetic resonance, they conclude that this product is a polymer with cumulene structure, probably $H-(C\equiv C\equiv C\equiv C)_n-H$. PA showed high heat resistance, being transformed into graphite only at $2300^{\circ}C$. Below $2300^{\circ}C$, the carbon in PA remains in the form of polyacetylene. Graphite is also formed by long boiling of annealed PA samples in concentrated HCl. The authors point to the readiness of transformation of carbon atom chains of PA into graphite monolayers, and the corresponding transformation of valence forms under the action of HCl. The electric resistivity ρ measured by the zero method on an MTB(MTV) bridge dropped with rising temperature. This is explained by the concentration of crystalline copper due to thermal dissociation and the separation of terminal copper atoms from PA. ρ continued dropping at higher temperatures when copper had already evaporated and no graphite was formed. This indicated an extension of PA chains during the pyrogenetic synthesis which took place due to thermal dissociation and copper separation, as well as subsequent recombination of the resulting free polymeric radicals. The emf α was measured by the compensation method on a MMTB (PPTV) high-resistance potentiometer. On the basis of the values obtained for ρ and α , the authors

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B103/B203

Synthesis and properties of...

conclude that the PA sample investigated is an n-type semiconductor. The copper atoms imbedded in the molecular carbon chain with polyallene structure play the role of the electron donor. This is confirmed by the fact that the α of PA samples which were produced with the use of stronger copper-free oxidizers (nitrate ion, H_2O_2) is equal to zero. The change of the sign of α (near zero at 1300 and 1500°C + above 1500 up to 2300°C corresponds to the transition of the PA sample to a p-type semiconductor. The authors think that this is coupled with the thermal dissociation and the separation of copper- and hydrogen atoms from the carbon chain, and is certainly connected with the acceptor properties of the terminal C atoms. There are 3 figures, 1 table, and 3 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR
(Institute of Mineral Fuels of the Academy of Sciences USSR)
Institut elementoorganicheskikh soyedineniy Akademii nauk
SSSR (Institute of Elemental-organic Compounds of the
Academy of Sciences USSR)

Card 3/5

20638

15.9207 2209 also 1043, 1143, 1138 S/G20/61/136/006/014/021
B103, B203

112210

AUTHORS: Kershak, V. V., Corresponding Member AS USSR, Kasatobain, M.,
Sladkov, A. M., Kudryavtsev, Yu. P., and Usenbayev, K.

TITLE: Synthesis and properties of polyacetylene

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 6, 1961, 1342-1344

TEXT: The authors produced polyacetylene (PA) and studied its chemical structure and physical properties. They assumed that PA formed in the oxidation of bis-acetylene acetylenides of the type $HC \equiv C - (CH_2)_n - C \equiv CH$ which are said to be among the polymeric products not yet studied. They had already suggested a formation mechanism of PA in Ref. 3. In the present investigation, they produced the required acetylenide by passing acetylene through the ammoniacal solution of a salt of bivalent copper. Subsequently, the acetylenide was oxidized by an aqueous solution of potassium ferricyanide at boiling temperature. The authors assumed that the resulting black powder (containing 98% of C) was a mixture of polymer homologs of polyacetylene. On the basis of the temperature-dependent weight losses

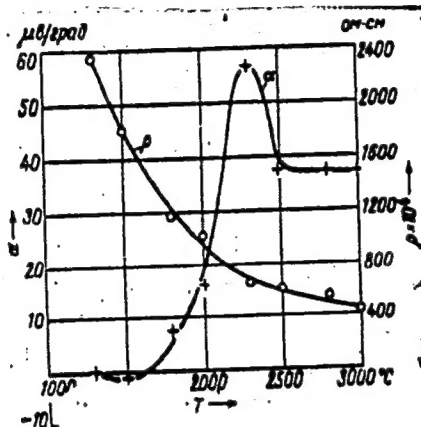
Card 1/5

20638

S/020/61/136/006/014/024
B103/B203

Synthesis and properties of...

Legend to Fig. 3: ρ and α ;
ordinate on the left: $-\mu v/\text{degree}$,
ordinate on the right: $\text{ohm}\cdot\text{cm}$.



Card 5/5

36612
S/062/62/000/004/012/013
B110/B101

11.1340
AUTHORS:

Korshak, V. V., Sladkov, A. M., and Luneva, L. K.

TITLE:

Synthesis of elemental organic polymers with acetylene bonds in their chain

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1962, 728

TEXT: New polymers were obtained by polycondensation of halides of elemental organic compounds, RMeCl_2 , with Na acetylenides of bis-acetylenes in polar solvents (tetrahydrofuran, dimethyl ether, diethylene glycol, ethyl ether, etc.). The acetylenide was obtained from finely distributed sodium or sodium amide and bis-acetylene in the solvent. Elemental organic compounds in the same solvent were added at room temperature, heated to $60-100^\circ\text{C}$, filtered off, and the polymer was separated from the filtrate. Thus, the acetylenide was obtained from p-di-ethynyl benzene and sodium. After the addition of dimethyl dichloro silane, the substance was boiled for 7 hrs, cooled, and diluted with water. A light-yellow polymer not melting at

Card 1/2

Synthesis of elemental organio ...

S/062/62/000/004/012/013
B110/B101

300°C and slightly darkening at 240°C (C = 66.45, H = 7.74, Si = 20.92%) precipitated. The infrared spectra showed $C\equiv C$ (2250 cm^{-1}) and $Si-CH_3$ stretching vibrations (1250 cm^{-1}). The range of elastic deformation was thermodynamically determined at 150-300°C. Similarly, an acetylenide was obtained from phenyl acetylene and sodium. Addition of dimethyl dichloro silane at room temperature and subsequent boiling for 4 hrs yielded di-p-phenyl ethinyl dimethyl silane (b. p. 180-185°C at 4 mm Hg). In an analogous manner, polymers can also be obtained from other compounds of elements of Group IV. The resulting monomers were used for producing polymers and copolymers.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk
SSSR (Institute of Elemental Organic Compounds of the
Academy of Sciences USSR)

SUBMITTED: December 25, 1961

Card 2/2

KORSHAK, V. V.; SLADKOV, A. M.; LUNEVA, L. K.

Elementoorganic polymers. Izv. AN SSSR Otd. khim. nauk no.12:
2251-2253 D '62. (MIRA 16:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

(Polymers) (Organometallic compounds)

SLADKOV, A.M.; KRONLAUZ, Ye.S.

Chemistry of organometallic compounds. Priroda 51 no.3:35-39
Mr '62. (MIRA 15:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR, Moskva.
(Organometallic compounds)

S/020/62/144/001/016/024
B119/B144

AUTHORS: Korshak, V. V., Corresponding Member AS USSR, Sladkov, A. M.,
and Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of 2,6-dimethyl-3,5-diethynyl
pyridine and 9,10-diethynyl-9,10-dihydroxy-9,10-dihydro-
anthracene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 115 - 117

TEXT: The authors checked their assumption that the reaction

$$n \text{ HC}\equiv\text{C}-\text{R}-\text{C}\equiv\text{CH} \xrightarrow[\text{Cu}^+]{\text{O}_2} \text{---}[\text{C}\equiv\text{C}-\text{R}-\text{C}\equiv\text{C}]_n \text{---}$$
 must lead to soluble products
(1) if it takes place in the presence of compounds containing only one $\text{HC}\equiv\text{C}$
group (lower molecular weight by early chain rupture; (2) if it proceeds
with compounds where R is a large hydrocarbon group, or (3) if R represents
a polar group. The compounds mentioned in the title were condensed alone,
and also in the presence of acetylene, p-diethynyl benzene, phenyl acetylene,
propargyl alcohol, and 2-methyl-5-ethynyl pyridine. The structure of the

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Oxidative dehydropolycondensation...

S/020/62/144/001/016/024
B119/B144

condensation products was determined from their infrared spectra. Products consisting of a soluble and an insoluble fraction of identical structure were obtained in all cases. The epr spectra taken for some condensation products showed equal concentration of individual electrons in the soluble and insoluble fractions. The highest number of individual electrons ($\sim 2.2 \cdot 10^{17}$ at a signal width of 7.2 oe) was found in the condensation product of 9,10-diethynyl dihydroxy dihydroanthracene with acetylene. There is a table. The most important English-language reference is: A. May, J. Org. Chem., 25, 1275 (1960).

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR
(Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: January 16, 1962

1962 2/2

S/020/62/144/004/019/024
B101/B138

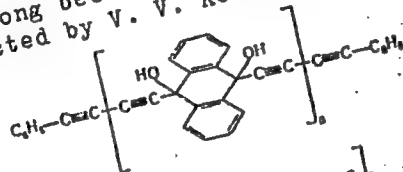
AUTHORS:

Myl'nikov, V. S., Sladkov, A. M., Kudryavtsev, Yu. P.,
Luneva, L. K., Korshak, V. V., Corresponding Member AS USSR,
and Terenin, A. N., Academician

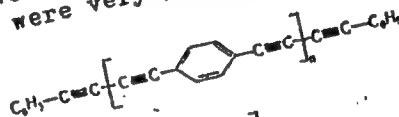
TITLE:

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 4, 1962, 840 - 843

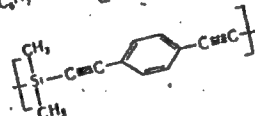
TEXT: Data for the polyacetylenes I - VIII are reported from the laboratory directed by A. N. Terenin where research on photosensitive polymers has long been proceeding. The compounds were synthesized in the laboratory directed by V. V. Korshak. I, II and III were very photosensitive in



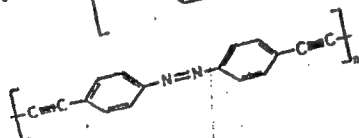
(I)



(II)



(III)



(IV)

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from an
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Card 1/3

conductivity were examined more
on of photo-emf showed a
with a narrow selective peak of
case of I and a wide peak in this range
illumination of II for 2 hr in ultraviolet light
The long-wave threshold of activation is at 366 mμ and the
405 mμ line is inactive. (3) Preliminary illumination is more effective
in vacuo than in air. The photo-emf of I increases during the first

"APPROVED FOR RELEASE: 08/24/2000

CIA-RDP86-00513R001651220019-4"

Card 2/3

Photo-semiconductor properties ...

S/020/62/144/004/019/024
B101/B138

3 - 5 min lighting, then slowly decreases, but after approx. 1 hr regains its initial value. After 1 - 2 hr storage in the dark this process is repeatable. (4) If II is activated by UV light in vacuo the admission of air immediately reduces its photo-emf to $1/2 - 1/3$. This effect is also repeatable. These results are explained by the UV light ionizing the conjugated molecules so that positively charged local centers are formed which act as electron traps. The photoelectron is retained in the polymer structure according to E. C. Lim, G. W. Swenson (J. Chem. Phys., 36, no. 1, 118 (1962)). The absorption of light permits the origination of an exciton which migrates between the molecules and disintegrates on a defect produced by the UV light to form a mobile hole and an electron trapped by the defect. Accordingly it should be possible to synthesize photosensitive polymers. There are 3 figures.

SUBMITTED: April 20, 1962

Card 3/3

3
KORSAK, V.V., VINOGRADOVA, S.V., SOSIN, S.L., SLADKOV, A.M.

Synthesis and electrophysical properties of the polymers with the
conjugated system of bonds and the polycoordination polymers.

Report submitted for the International Symposium of Macromolecular chemistry
Paris -1-6 July 63

SLADKOV, A.M.; KORSHAK, V.V.; MAKHSUMOV, A.G.

Synthesis of polyesters with acetylenic bonds in their chain. Izv.
AN SSSR. Ser.khim. no.7:1343-1345 J1 '63. (MIRA 16:9)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Esters) (Polymers) (Acetylene compounds)

KASATOCHKIN, V.I.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; SMUTKINA, Z.S.;
KHRENKOVA, T.M.; KORSHAK, V.V.

Properties of polyacetylenes. Izv. AN SSSR Ser.khim. no.10:1766-1771
O '63. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut
goryuchikh iskopayemykh.

KORSHAK, V.V.; SLADKOV, A.M.; KUDRYAVTSEV, Yu.P.; MAKHSUMOV, A.G.

Synthesis of polyesters containing acetylenic bonds in the chain.
Izv. AN SSSR Ser.khim. no.10:1852-1853 0 '63. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 19854-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10
 ESD(gs)/ESD(t) WW/RM
 ACCESSION NR: AR4048158 S/0081/64/000/011/S024/S024

SOURCE: Ref. zh. Khimiya, Abs. 11S152

AUTHOR: Sladkov, A.M., Korshak, V.V., Maksumov, A.G.

TITLE: The synthesis of simple polyethers with a triple bond in the chain and a study of their properties

CITED SOURCE: Dokl. AN UzSSR, no. 12, 1963, 28-31

TOPIC TAGS: polyether, acetylenic polyether, polyether synthesis, propargyl ether, oxidative dehydropolycondensation, polyether heat resistance, infrared spectrum

TRANSLATION: Polyethers were obtained from the synthesized dipropargyl ethers of 2, 2-(p, p'-dihydroxydiphenyl)-propane, hydroquinone, resorcinol, orcin, phenolphthalein, rosolic acid and pentaerythritol by an oxidative dehydropolycondensation reaction in a mixture of pyridine and methanol at a high monomer concentration. The polymers were dark colored, insoluble powders. The infrared spectra of the polymers showed absorption bands characteristic of conjugated C=C bonds, simple ether linkages and substituted aromatic nuclei. The polymers showed high thermal stability. The methods for isolating

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L 19854-65

ACCESSION NR: AR4048158

the monomers and polymers are presented. V.F.

SUB CODE: OC

ENCL: 00

Card 2/2

SLADKOV, A.M.; UKHIN, L.Yu.; KORSHAK, V.V.

Reaction of copper acetylides with halogen compounds.

Izv. AN SSSR. Ser. khim. no.12:2213-2215 D '63.

(MIRA 17:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 18044-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW/MAY
 ACCESSION NR: AP3001145 S/0190/63/005/006/0793/0798

AUTHORS: Korshak, V. V.; Sladkov, A. M.; Kudryavtsev, Yu. P.

TITLE: Oxidative dehydropolycondensation of p-diethynylbenzene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 5, no. 6, 1963, 793-798

TOPIC TAGS: oxidative condensation, copolycondensation, dehydropolycondensation, diethynylbenzene, acetylene

ABSTRACT: Earlier studies by the authors on dehydropolycondensation of p-diethynylbenzene by oxidation with potassium ferricyanide in the presence of cuprous chloride induced the present investigation, where oxygen of the air, hydrogen peroxide, and ammonium persulfate were added to the list of oxidizers. For copolymerization studies, acetylene, phenylacetylene, and ethylacetylene were used in conjunction with p-diethynylbenzene. The oxidative dehydropolycondensation of p-diethynylbenzene by air was conducted in a pyridine solution in the presence of cuprous chloride, through which air was bubbled for 1.5 hours, resulting in the formation of a yellow precipitate. The obtained substance was subjected to elementary analysis and to infrared spectroscopy, which showed

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L 18044-63

ACCESSION NR: AP3001145

absorption bands in the 3300 and 1250 cm^{-1} regions, which are characteristic for $\equiv\text{C-H}$ bonds, while the 2200 cm^{-1} band is indicative of the $\text{C}\equiv\text{C}$ bond. The appearance of other characteristic bands indicated the presence of phenyl nuclei along the polymeric chain. The oxidative copolymerization of diethynylbenzene with acetylene, phenylacetylene and ethylacetylene yielded low molecular ether-soluble compounds with the first two instances, and an insoluble product with ethylacetylene. Orig. art. has: 4 formulas and 5 charts.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR (Institute of Elementoorganic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 14Oct61

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 002

Card 2/2

L 18184-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pe-4/Pr-4 RM/MAY/WW 70
ACCESSION NR: AP3006746 S/0190/63/005/009/1284/1287 63
AUTHOR: Korshak, V. V.; Sladkov, A. M.; Luneva, L. K.; Girshovich, A. S.

TITLE: Synthesis and study of polymers containing allyloxytitanocene

SOURCE: Vyssokomolekulyarnyye soedineniya, v. 5, no. 9, 1963, 1284-1287

TOPIC TAGS: titanium compounds, titanocene, dicyclopentadienyl-titanium(IV) dichloride, allyl alcohol, allyloxytitanocene, allyloxydicyclopentadienyltitanium(IV) chloride, synthesis, polymerization, polymer, dicyclopentadienyltitanium(IV) dichloride, trimer, styrene, methyl methacrylate, copolymerization, copolymer, allyloxydicyclopentadienyltitanium(IV). polymer with styrene, styrene. polymer with allyloxydicyclopentadienyltitanium, allyloxydicyclopentadienyltitanium(IV). polymer with methyl methacrylate, methyl methacrylate. polymer with allyloxydicyclopentadienyltitanium, copolymer structure, copolymer property

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L 18184-63
ACCESSION NR: AP3006746

ABSTRACT: The synthesis of allyloxytitanocene [allyloxydicyclopentadienylyltitanium chloride] (I) and its polymerization and copolymerization with styrene or methyl methacrylate have been studied. After an unsuccessful attempt to synthesize bis allyloxytitanocene [bis(allyloxy)dicyclopentadienylyltitanium] from 1 mol allyloxytitanocene [dicyclopentadienylyltitanium dichloride] and 2 mols allyl alcohol, I was prepared from stoichiometric amounts of the starting materials in the presence of ammonia to bind HCl. The structure of I was determined by IR spectroscopic analysis. Polymerization of I in toluene solution at 100C for 10 hr in the presence of 0.1% benzoyl peroxide yielded the trimer of I, as shown by molecular-weight measurements and IR and elemental analysis data. Copolymers of I, together with polystyrene or poly(methyl methacrylate), were produced by heating 10% I solutions in styrene or methyl methacrylate at 120C for 3 hr in the presence of 0.5% benzoyl peroxide. The copolymers are orange transparent solids with molecular weights of 22,100 and 70,000. IR spectroscopic analysis of the copolymers showed that the titanocene groups [sic] are located in the side chains and that the backbones of the copolymers differ from those

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L 18184-63

ACCESSION NR: AP3006746

of polystyrene and poly(methyl methacrylate). The softening point of the copolymer with styrene (120C) is higher than that of polystyrene (100C). Orig. art. has: 2 figures.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 23Dec61

DATE ACQ: 30Sep63

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 002

Card 3/3

L 19444-63 EPF(c)/EWP(j)/EWT(m)/BDS ASD/ESD-3 Pc-4/Pr-4 RM/WW/MAY
 ACCESSION NR: AP3006747 S/0190/63/005/009/1288/1291

AUTHOR: Korshak, V. V.; Sladkov, A. M.; Luneva, L. K.;
Bulgakova, I. A. 75/1 B

TITLE: Study in the field of coordination polymers. 16. Synthesis
 of polymers based on orthotitanates and bis-(Beta-diketones)

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 9, 1963,
 1288-1291

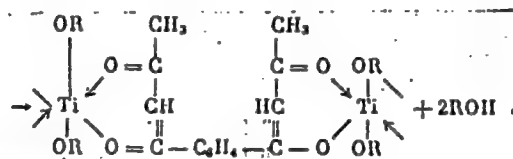
TOPIC TAGS: polymers, coordination polymers, soluble coordination
 polymers, soluble coordination polymer synthesis, synthesis,
 acetoacetic acid. 2,2'-terephthaloyldi-. ethyl ester, copper
 acetate, acetic acid. copper salt, copper, nickel, cobalt, mag-
 nesium, mercury, 1,3-butanedione. 1-phenyldi-, 2-propanedione.
 1-terephthaloyldi-, H_4TiO_4 . alkyl ester, H_4TiO_4 . tetraethyl ester,
 2,4-pentanedione, 1,3-butanedione. 1-phenyl-, complex, H_4TiO_4 .
 tetra-tert-butyl ester, hydrolysis, coordination polymer property,
 property

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L 19444-63

ACCESSION NR: AP3006747

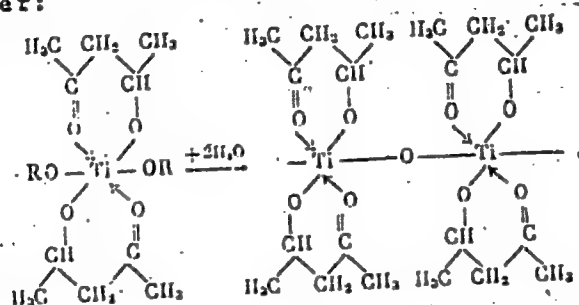
ABSTRACT: Soluble coordination polymers have been prepared by the following methods: 1) Use of addenda with polar substituents. Heating of a 5% alcohol solution of ethyl 2,2'-terephthaloyldiacetoacetate with an excess of a saturated alcohol solution of copper acetate yielded a coordination polymer in the form of a green precipitate. The polymer withstands heating to 200C, is readily soluble in diethylformamide, and is slightly soluble in alcohol, benzene, and acetic acid. Similar products were prepared using Ni, Co, Mg, and Hg. 2) Synthesis of complexes of diketones with metals having the coordination number 6. Heating of terephthaloyldiacetone with tetraethyl or tetra-tert-butyl orthotitanate in dry xylene, with stripping off of the theoretical amount of alcohol, yielded products fully soluble in xylene and having the general formula (as confirmed by elemental analysis),



L 19444-63

ACCESSION NR: AP3006747

By addition of petroleum ether, these products can be precipitated from xylene solution as a yellow fine crystalline substance partly soluble in benzene and dimethylformamide. The molecular weight of the product prepared with tert-butyl titanate was determined by the cryoscopic method to be 800, corresponding to that of the dimer. 3) Synthesis of acetylacetonate or benzoylacetonate complexes with tetra-tert-butyl titanate and their hydrolysis with the theoretical amount of water:



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L 19444-63

ACCESSION NR: AP3006747

The acetylacetonate complex yielded a polymer with molecular weight 12,000 which melts at about 120C and is hydrolyzed in air to form a brittle insoluble product. The benzoylacetonate complex yielded a polymer with molecular weight 900 which is soluble in methyl alcohol, benzene, acetone, and dimethylformamide. Orig. art. has: 4 formulas.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR
(Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 23Dec61

DATE ACQ: 30Sep63

ENCL: 00.

SUB CODE: CH

NO REF SOV: 003

OTHER: 000

4/4
Card 4/5

L 11113-63

EWP(j)/EPF(c)/EWT(m)/BDS/ES(s)-2--AFFTC/ASD/ESD-3/SSD--Pc-4/

Pr-4/Pt-4--RM/WW/MAY

ACCESSION NR: AP3001448

S/0074/63/032/005/0509/0538 78

AUTHOR: Sladkov, A. M.; Kudryavtsev, Yu. P. 76TITLE: Polyacetylenes 9SOURCE: Uspekhi khimii, v. 32, no. 5, 1963, 509-538

TOPIC TAGS: synthesis of polyacetylenes, properties of polyacetylenes, macrocyclic compounds, dehydrocondensation

ABSTRACT: The original article gives a summary of the synthesis and properties of polyacetylenes, macrocyclic compounds with conjugated acetylenic bonds,⁷ and the synthesis of polyacetylenes by an oxidizing dehydropolycondensation of bis-acetylenes. The polyacetylenes presently synthesized have as many as 10 conjugated triple bond molecules. The natural polyacetylenic compounds are not discussed. The basic methods which make the synthesis of a large variety of polyacetylenic hydrocarbons were developed by K. Glaser, P. Cadiot and W. Chodkiewicz, and E. R. H. Jones. These methods are represented as shown in the enclosure. Butadiene-1,3 (diacetylene), one of the simplest compounds, was first prepared through oxidation of acetylenide with CuCl, and later with KMnO₄. It was found that water solutions of Ca(OH)₂ and K₂CO₃ when used in the reaction give yields as high as 60 percent. Diacetylene is quite unstable and can be stored only at

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L 11143-63

ACCESSION NR: AP3001448

6

temperatures lower than -25°C . When the second acetylenic bond is introduced into an acid molecule the dissociation constant increases. A noticeable amount of diacetylene glycol was found in all the reactions. A number of explanations are given for the mechanism of the oxidized dehydrocondensation. Klebanskiy with his co-workers believe that the formation of diacetylenic compounds in aqueous solutions proceed by an ionic radical mechanism. Triacetylenes which are very unstable even at -50°C and diphenyltriacetylenes which are quite stable in comparison to aliphatic triacetylenes were also synthesized by various methods. The synthesis of octatetrayne-1,3,5,7 (tetraacetylene), decapentayne-1,3,5,7,9 (penta-acetylene), dodecahexayne-1,3,5,7,11 (hexa-acetylene), tetradecaheptayne-1,3,5,7,9,11,13 (hepta-acetylene), hexadecaoctatetrayne-1,3,5,7,9,12,13,15 (octa-acetylene), and eicosa-decayne-1,3,5,7,9,11,13,15,17,19 (deca-acetylene) by various methods and authors are given in detail. The stability of the above acetylenes decreases with the increase of acetylenic groups in the polyacetylene chain. Their stability increases with the substitution of the end hydrogen with alkyl or aryl radicals, and the size and configuration of the radical. Due to their specific reaction ability, the acetylenic hydrocarbons have a special place in organic chemistry. The electron structure of the acetylenic bond differs from the ethylene bond by the fact that Sigma bond is formed from 2 sp hybrid orbits. Nucleophilic reaction capability of acetylenic bond and the oxidation of acetylenic hydrogen is explained by

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L 11143-63

ACCESSION NR: AP3001448

the asymmetric electronic distribution. A detailed description of the mechanisms and products is given covering the following reactions: hydrogen substitution; nucleophilic additions with CH_3OH , HCN , ROH , $\text{CH}(\text{COOR})_2$, CH_3Li and H_2O , $(\text{AlH}_4)^-$ and H_2O , and the formation of cis- and trans isomers; electrophilic additions; radical reactions; catalytic hydration; and formation of cumulenes (mesomeric structures) from poly-ynes. This paper also presents the synthesis of a series of macrocyclic compounds with conjugated acetylenic bonds obtained through oxidation with oxygen or oxygen with CuCl_2 or other oxidizers. The cyclic compounds are in the form of dimers, trimers tetramers, pentamers, hexamers, and even higher cyclic acetylenes. It was noted that in order to avoid the formation of a linear polymer the reaction must take place in a homogeneous solution. One of the best solutions was found to be pyridine and methanol mixture. The synthesis of polyacetylenes from bis-acetylenes by the oxidizing dehydropolycondensation was also studied. The oxidant used in these reactions was oxygen which was used in conjunction with mono- or di- valent copper. Additional oxidation of the reaction mixture was attained with $\text{K}_3\text{Fe}(\text{CN})_6$ which resulted in the formation of poly-yne hydrocarbons. It must be noted that the use of strong oxidants such as HClO_4 results in the formation of coalescent structures. Dehydropolycondensation of acetylene with 9,10-diethynyl-9,10-dioxo-9,10-dihydroanthracene gives a soluble product. Oxidative dimerization of monopyridy-

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L 11143-63

ACCESSION NR: AP3001448

2

lacetylenes forms dipyridylpolyacetylenes. It was discovered that some synthesized polyacetylenes have a high photoelectric sensitivity¹⁵ in the modulated light. This discovery points to the approach of the possibility of synthesizing photosensitive polymers. Orig. art. has: 4 tables, 1 graph, and 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soedineniy akademii nauk SSSR (Ins-
titute of Organo-Elemental Compounds, Academy of Sciences SSSR)

SUBMITTED: 00

DATE ACQD: 12Jun63

ENCL: 01

SUB CODE: 00

NO REF SOV: 020

OTHER: 067

Card 4/54

KASATOCHKIN, V.I.; SLADKOV, A.M.; ASEYEV, Yu.G.; KUDRYAVTSEV, Yu.P.;
YEGOROVA, O.I.; KORSHAK, V.V.

Infrared spectra of polyynes. Dokl. AN SSSR 153 no.2:346-349
N '63. (MIRA 16:12)

1. Institut goryuchikh iskopayemykh AN SSSR i Institut
elementoorganicheskikh soedineniy AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Korshak).

ACCESSION NR: AP4028153

S/0291/64/000/001/0067/0070

AUTHOR: Korshak, V. V.; Sladkov, A. M.; Makhsumov, A. G.

TITLE: Synthesis and investigation of properties of polyesters containing triple bonds in the chain. Communication 2. Production of polyesters by the oxidative dehydropolycondensation reaction

SOURCE: Uzbekskiy khimicheskiy zhurnal, no. 1, 1964, 67-70

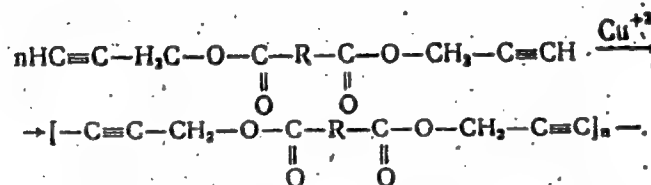
TOPIC TAGS: dipropargyl ester, dipropargyl polyester, acetylenic polyester, dipropargyl isophthalate, dipropargyl succinate, dipropargyl maleate, IR spectra, melting point, softening temperature, heat resistance, oxidative hydropolycondensation

ABSTRACT: Several new dipropargyl esters and polyesters were synthesized. Dipropargyl terephthalate, oxalate, isophthalate, succinate and maleate (the last three compounds have not been reported in the literature) were prepared by reaction of propargyl alcohol and the appropriate acid anhydride. The dipropargyl polyesters were then prepared by oxidative dehydropolycondensation in the

Card 1/3

ACCESSION NR: AP4028153

presence of copper acetate in pyridine and methanol solutions by re-fluxing for 20 hours, pouring the product into cold water, and filtering the black polymer, which is formed according to the reaction:



IR spectra of the polymers show C-C, C-O, C=O and C-O-C groups and the absence of the $\equiv\text{C}-\text{H}$ group. The polymers have high softening temperatures and high thermal stability (fig. 1). Orig. art. has: 2 tables, 1 figure and 1 equation

ASSOCIATION: Institut khimii polymerov AN UzSSR (Institute of Polymer Chemistry, AN UzSSR)

SUBMITTED: 24May63

DATE ACQ: 29Apr64

ENCL: 01

SUB CODE: OC

NO REF SOV: 003

OTHER: 005

Card 2/3

ATD PRESS: 3044

ACCESSION NR: AP4028153

ENCLOSURE: 01

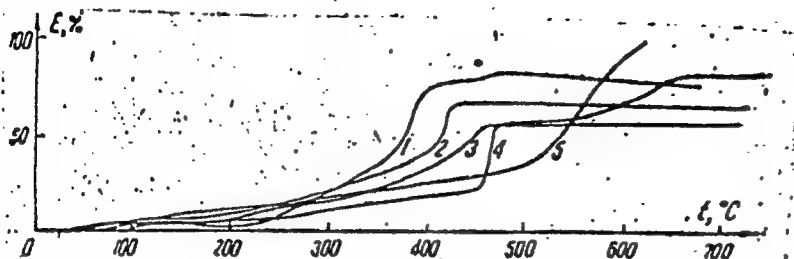


Fig. 1. Synthesis and investigation of polyester properties

1 - Dipropargyloxalate polymer; 2 - dipropargylmaleate polymer; 3 - dipropargylterephthalate polymer; 4 - dipropargylsuccinate polymer; 5 - dipropargylisophthalate polymer.

Card 3/3

SIADKOV, A.M.; UKHIN, L.Yu.

Preparation of bromoacetylenes and acetylenic nitriles. *Izv. AN SSSR. Ser. khim.* no.2:392-393 F '64. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ACCESSION NR: AP4033390

S/0062/64/000/004/0733/0736

AUTHOR: Makhsumov, A. G.; Sladkov, A. M.; Korshak, V. V.

TITLE: Acid polycondensation of dipropargyl ethers containing silicon, phosphorus and fluorine.

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 4, 1964, 733-736

TOPIC TAGS: acid polycondensation, dipropargyl ether, acetylenic polymer, triple bond containing polymer, phosphorus containing acetylenic polymer, fluorine containing acetylenic polymer, silicon containing acetylenic polymer, methylphosphonic acid dipropargyl ether, diphenoxysilane dipropargyl ether, polydehydrocondensation, thermal stability, hexafluorodiane dipropargyl ether, oligomer, IR spectrum

ABSTRACT: The authors continued their earlier work in preparing polymers containing triple bonds in the chain by acid polycondensation of dipropargyl ethers (A.M. Sladkov, V. V. Korshak i A. G. Makhsumov. Izv. AN SSSR. Ser. khim. 1343, 1963), attempting to prepare acetylenic polymers containing phosphorus, fluorine or silicon. These acetylenic ethers, not described previously in the literature,

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ACCESSION NR: AP4033390

were synthesized: the dipropargyl ethers of methylphosphonic acid, of diphenoxysilane, and of hexafluoro-2,2-bis-(4-hydroxyphenyl)-propane. When subject to acid polydehydrocondensation the first compound hydrolysed to the original materials, methylphosphonic acid and propargyl alcohol; the second hydrolysed to form polyphenoxysiloxane. A thermally stable oligomer of the dipropargyl ether of hexafluorodiane, molecular weight 2730 (dark brown, boiling 95-98C) and molecular weight 1327 (yellow, boiling 160-162C), was formed from the third. A polymer containing phosphorus and acetylenic bonds was obtained by the polycondensation of methylphosphonic acid chloranhydride with butyndiol. IR spectra identifying the products are shown. Orig. art. has: 4 figures.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Organometallic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 09Dec63

DATE ACQ: 15May64

ENCL: 00

SUB CODE: 00

NO REF SOV: 003

OTHER: 001

Card 2/2

LARINA, L.P.; SLADKOV, A.M.; MAKHSUMOV, A.G.

Ultraviolet adsorption spectra of dipropargyl ether and ester
solutions. Izv. AN SSSR Ser. khim. no.7:1349-1352 J1 '64.
(MIRA 17:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

SLADKOV, A.M.; UKHIN, L.Yu.

Interaction of silver acetylides with diazonium salts. Izv.
AN SSSR. Ser. khim. no.8:1552-1553 Ag '64. (MIRA 17:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 12459-65 EWT(m)/EPF(c)/ENP(j)/I¹ Pc-4/Pr-4 RM
ACCESSION NR: AP4047407 6/0062/64/000/010/1905/1907

AUTHOR: Sladkov, A. M.; Korshak, V. V.; Makhsumov, A. G.

TITLE: Oxidative polydehydrocondensation of dipropargyl ethers 7 6

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1905-1907

TOPIC TAGS: polyether, dipropargyl ether, oxidative polyhydrocondensation

ABSTRACT: New dipropargyl ethers of 4,4'-dihydroxybiphenyl, 1,4-dihydroxynaphthalene, alizarin, and quinizarin have been synthesized and polymers prepared therefrom by oxidative polydehydrocondensation in the presence of copper salts. Because polyethers prepared earlier by this method contained copper in complex form, it was of interest to compare the properties of polymers with and without specific complex-forming groups. The synthesis of the monomers was conducted by reacting the dihydroxy compound with propargyl bromide in the presence of KOH at 70-80C. The monomers were identified by

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L 12459-65

ACCESSION NR: AP4047407

IR spectroscopy and elemental analysis; their melting points ranged from 126 to 172C. As expected, polyethers from alizarin and quinizarin, which contain complex-forming groups, had a much higher copper content than the other two polyethers. Orig. art. has: 2 tables and 1 figure.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR (Institute of Organoelemental Compounds, Academy of Sciences SSSR).

SUBMITTED: 05Mar64

ATD PRESS: 3125

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 004

OTHER: 000

Card 2/2

L 12466-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP4047408

S/0062/64/000/010/1908/1908

AUTHOR: Kudryavtsev, Yu. P.; Sladkov, A. M.; Korshak, V. V.

TITLE: Oxidative polydehydrocondensation of p-diethynylbenzene and acetylene in the presence of p-substituted phenylacetylenes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1908

TOPIC TAGS: polyynes, oxidative polydehydrocondensation, polyacetylene

ABSTRACT: To prepare low-molecular-weight polyynes suitable as standards for IR spectroscopy, the oxidative polydehydrocondensation of p-diethynylbenzene or acetylene in the presence of p-iodo, p-bromo-, p-(methoxy)-, p-nitro-, p-tert-butyl-phenylacetylene, or α -naphthylacetylene was carried out. Elemental analysis and IR spectroscopy confirmed that the type of p-substituent affects the reaction rate: electron donors facilitate it and electron acceptors inhibit it. In all cases the p-substituted phenylethynyl groups (A)

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L 12466-65

ACCESSION NR: AP4047408

were the end groups:



In the case of acetylene and p-nitrophenylacetylene, only p,p'-dinitrodiphenylbutadiene was obtained. The oligomer of p-diethynylbenzene and p-iodophenylacetylene had an mp of 68-69°C. Orig. art. has: 2 formulas.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR (Institute of Organoelemental Compounds, Academy of Sciences, SSSR).

SUBMITTED: 09Mar64

ATD PRESS: 3126

ENCL: 00

SUB CODE: GC

NO REF SOV: 003

OTHER: 001

Card 2/2

ACCESSION NR: AP4043776

S/0190/64/006/008/1398/1402

AUTHOR: Sladkov, A. M., Korshak, V. V., Makhsumov, A. G.

TITLE: Synthesis and investigation of the properties of polyesters containing triple bonds in the chain. Polycondensation of acetylene glycols with dicarboxylic acids

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 8, 1964, 1398-1402

TOPIC TAGS: polyester, acetylene, polyacetylene, acetylene glycol, dicarboxylic acid, polycondensation, polymer physical property

ABSTRACT: Polyhexadieneisophthalate, polybutenephthalate, polybutynephthalate, polybutyneisophthalate, polyhexadieneterephthalate, polybutynemalate, polybutenemalate, polybutenesuccinate, polybutynesuccinate, and polybutenefumarate were prepared by the classical condensation of acetylene glycols with the chloroanhydrides of dicarboxylic acids, to supplement the results of a previous study in which similar polymers were obtained by polydehydrocondensation with oxidation. The melting point, yield, molecular weight, solubility, empirical formula of the monomer and elemental analysis, found vs calculated, are tabulated, as well as the infrared spectra of the polymers. The synthesis of 2,4-hexadienediol-1,6 and the polycondensation of butynediol with succinic anhydride, butynediol

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ACCESSION NR: AP4043776

with isophthalylchloride, 2,4-hexadienediol-1,6 with isophthalylchloride and butenediol-1,4 with fumaric acid are described in detail. Thermomechanical curves (relative elongation vs. temperature) of the polymers are presented and discussed. Orig. art. has: 3 tables and 1 figure

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organometallic Compounds, AN SSSR).

SUBMITTED: 08Aug63

SUB CODE: OC

NO REF SOV: 001

OTHER: 001

Card 2/2

L 11330-65 EWT(m)/EPF(c)/EWP(j)/T PC-4/Pr-4 RM
 S/0190/64/006/009/1570/1572
 ACCESSION NR: AP4045423

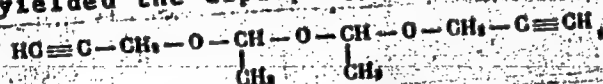
AUTHOR: Korshak, V. V.; Sladkov, A. M.; Makhsumov, A. G.

TITLE: Preparation of polyethers by oxidative polydehydrocondensation of dipropargyl acetals B

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 6, no. 9, 1964, 1570-1572

TOPIC TAGS: polyether, dipropargyl acetal, oxidative polydehydrocondensation

ABSTRACT: Communication IV of the series "Synthesis and study of the properties of polymers with acetylenic bonds in the backbone" reports that certain new dipropargyl acetals have been prepared and converted to a new type of polyether. Diacetal preparation involved the reaction of propargyl alcohol with formaldehyde, acetaldehyde, benzaldehyde, or furfuraldehyde. Reaction of propargyl alcohol with paraldehyde yielded the dipropargyl acetal of the linear dimer,



Card 1/2

L 11330-65

ACCESSION NR: AP4045423

and the monopropargyl acetal. Acid catalysts were used. The structures were confirmed by elemental analysis, molar refraction, molecular-weight determination, and IR spectroscopy. Oxidative polydehydrocondensation of the diacetals yielded dark insoluble polymers containing copper in complex form. Orig. art. has: 1 figure and 2 formulae.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR
(Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 21Sep63

ATD PRESS: 3107

ENCL: 00

SUB CODE: OC, MT

NO REF SOV: 003

OTHER: 001

Card 2/2

L 12608-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
 ACCESSION NR: AP4045431 8/0190/64/006/009/1642/1645

AUTHOR: Sladkov, A. M.; Korshak, V. V.; Makhsumov, A. G.

TITLE: Formation of copper complexes from polyesters with acetylenic bonds in the backbone

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 9, 1964, 1642-1645

TOPIC TAGS: copper complex, propargyl benzoate, hexadiyndiol dibenzoate, diphenoxyhexadiyne, acetylenic polyester

ABSTRACT: A study has shown the possibility of preparing organic copper complexes containing conjugated tripole bonds and ether or ester linkages. Propargyl benzoate hexadiyndiol dibenzoate, and 1,6-diphenoxy-2,4-hexadiyne were prepared for the first time, the last two by oxidative dimerization of the propargyl ester or ether. Poly-(hexadiyndiol isophthalate), poly(hexadiyndiol terephthalate), and poly(butyndiol isophthalate) were prepared by polycondensation. To form the copper complexes, these compounds were subjected to oxidative polydehydrocondensation by treatment with a pyridine solution of cop-

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L 12608-65

ACCESSION NR: AP4045431

per acetate and refluxing of the mixture for 3—3.5 hr. Dark-brown insoluble products containing 1—2% Cu were formed in all cases. They were stable to ammonia, dilute HCl, and heating to 120—150°C. Their EPR spectra were typical of complex-(ionic)-bound copper, with no narrow signal in any case. IR spectra were also recorded. The preliminary conclusion was made that this type of complex differs from the ordinary copper complexes with oxygen-containing organic compounds in that, apparently, the pi-electrons of conjugated triple bonds participate in the formation of this complex. Orig. art. has: 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR
(Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 28Oct63

ATD PRESS: 3108

ENCL: 00

SUB CODE: OC, IC

NO REF SOV: 002

OTHER: 001

Card 2/2

KORSHAK, V.V.; SLADKOV, A.M.; MAKHSUMOV, A.G.

Synthesis and study of the properties of polyesters with triple
bonds in the chain. Report No.2. Uzb.khim.zhur. 8 no.1:67-70
'64. (MIRA 1714)

1. Institut khimii polimerov AN UzSSR.

ADOMAYTENE, S.V.; SLADKOV, A.M.; SHISHKOV, V.P.

Condensation of vinyl ethers with amides of substituted carboxylic acids. Part 1. Zhur.ob.khim. 34 no.2:432-434 F '64. (MIRA 17:3)

ADOMAYTENE, S.V.; SLADKOV, A.M.; SHISHKOV, V.P.

Condensation of vinyl ethers with amides. Part 2. Zhur. ob. khim.
34 no.9:2958-2960 S '64. (MIRA 17:11)

GORSHKOVA, G.N.; CHUBAROVA, M.A.; UKHIN, L.Yu.; SLADKOV, A.M.;
KASATOCHKIN, V.I.

Infrared and ultraviolet absorption spectra of substituted
diphenylacetylenes. Zhur. fiz. khim. 38 no.10:2485-2487
O '64. (MIRA 18:2)

1. Institut goryuchikh iskopayemykh AN SSSR.

GORSHIKOVA, G.N.; CHUBAROVA, M.A.; SIADKOV, A.M.; BAHIN, L.Ya.; KASATOCHNIK, V.I.

Infrared and ultraviolet absorption spectra of substituted ethynylbenzenes and diethynylbenzenes. Izv. fiz. khim. 33 no. 10:2513-2516 O 1964.

Infrared and ultraviolet absorption spectra of substituted diphenylbutadiynes. Ibid.:2516-2520 (MIRA 18:2)

1. Institut goryuchikh iskopayemykh Instituta elementoorganicheskikh sovedinennykh AN SSSR.

SLADKOV, A.M., kand. khim. nauk; KUDRYAVTSEV, Yu.P.

Is a third form of carbon possible? Priroda 53 no.5:88-94
'64. (MIRA 17:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR,
Moskva.

ACCESSION NR: AP4034542

S/0020/64/155/005/1140/1143

AUTHOR: Sladkov, A. M.; Korshak, V. V. (Corresponding member); Kudryavtsev, Yu. P.; Makhsumov, A. G.

TITLE: Synthesis of polyethers containing triple bonds in the chain.

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1140-1143

TOPIC TAGS: polyether, synthesis, triple bond polyether, monopropargyl ether copolymer, dipropargyl ether copolymer, diethynylbenzene copolymer, unsaturated ether, electrophysical property, photoelectromotive force, conjugated polyene, IR spectra, acid polydehydrocondensation, conjugated triple bond, acetylenec ether polymer

ABSTRACT: Polyethers based on the acid condensation products of mono- and dipropargyl ethers with p-diethynylbenzene (DEB) were synthesized and their properties, especially their electrophysical properties, were studied. DEB was condensed under acid conditions with the dipropargyl ethers of 4,4-dihydroxydiphenyl, of 4,4-dihydroxydiphenyl-ol-2-propane, and of hexafluoro-2,2-bis-(4-hydroxyphenyl)-propane, and the propargyl ethers of phenol, quinizarin and benzoic

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ACCESSION NR: AP4034542

acid. These unsaturated ethers were selected because their certain electro-physical properties, such as photoelectromotive force. The characteristic for conjugated polyenes were absent in these polymers. It was hoped that incorporating DEB in the chain of the polyether molecule would change its electrophysical properties. IR spectra of the products obtained showed the characteristic of the absorption bands for the acid polydehydrocondensation of DEB were preserved. From IR data and elementary analysis it is concluded that the generally insoluble polymers contained conjugated triple bonds alternated with the ether groups. "IR spectra were obtained in the INEOS AN SSSR laboratory by N. A. Chumayevsk, whom the authors sincerely thank." Orig. art. has: 4 figures and 2 tables./

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 29Oct63

DATE ACQ: 13May64

ENCL: 00

SUB CODE: 00

NO REF SOV: 004

OTHER: 000

Card 2/2

L 8900-65 EWT(1)/EPA(s)-2/ENQ(k)/ENT(m)/ENP(j)/T Pz-6/Pc-l/Pt-10 ESD(dp)/
 ASD(a)-5/ESD(t)/AFWL/BAEM(t) AT/RM
 S/0020/64/158/002/0389/0392
 B
 ACCESSION NR: AP4045633
 AUTHOR: Kudryavtsev, Yu. P.; Sladkov, A. M.; Asyev, Yu. G.;
Nedoshivin, Yu. N.; Kasatochkin, V. I.; Korshak, V. V. (Corresponding
 member AN SSSR)
 TITLE: Study of the properties and structure of carbyne
 SOURCE: AN SSSR. Doklady*, v. 158, no. 2, 1964, 389-392
 TOPIC TAGS: organic semiconductor, semiconducting polymer, dehydro-
chlorination, polyacetylene
 ABSTRACT: Polymers containing conjugated polyene groups in the back-
 bone have been studied by IR and EPR spectroscopy. The polymer sam-
 ples were prepared by dehydrochlorination of poly(vinylidene chlo-
 ride): 1) with sodium amide in liquid ammonia; 2) with sodium amide
 in tetrahydrofuran; 3) as in (2), but with further treatment with
 sodium methylate in boiling methanol; and 4) with fusion with sodium
 metal. IR spectra of the samples were recorded and compared with
 those of polyynes prepared by oxidative polycondensation of acetylene.
 In all cases except that of sodium fusion, absorption bands corres-
 Card 1/2

L 8900-65

ACCESSION NR: AP4045633

ponding to the C≡C bond were found. It was concluded that poly(vinylidene chloride) dehydrochlorination is a suitable preparative method for polyyne or, at least, for fragments thereof. All of the samples gave a narrow EPR signal, with a g-factor close to that of a free electron and a line width of 5—9 oe; the unpaired electron concentration rose with the degree of dehydrochlorination. Orig. art. has: 1 formula and 3 figures.

ASSOCIATION: Institut elementoorganicheskikh soedineniy. Akademi nauk SSSR (Institute of Organoelemental Compounds, Academy of Sciences SSSR)

SUBMITTED: 30Apr64

ATD PRESS: 3109

ENCL: 00

SUB CODE: MT,SS

NO REF SOV: 004

OTHER: 001

Card 2/2

SLADKOV, A.M.; UKHIN, L.Yu.; GORSHKOVA, G.N.; CHUBAROVA, M.A.; MAKHSUMOV, A.G.;
KASATOCHKIN, V.I.

Synthesis and spectra of iodo and bromoacetylene derivatives.
Zhur.org.khim. 1 no.3:415-421 Mr '65. (MIRA 18:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L 37718-65 EFP(o)/EPR/EPA(s)-2/EWP(j)/EWT(m)/EWP(b)/T/EWP(t) Pc-4/Pr-4/Pe-4/
Pt-10 IJP(o) RM/WB/JD S/0190/65/007/003/0427/0431
ACCESSION NR: AP5008368
AUTHOR: Luneva, L. K.; Sladkov, A. M.; Korshak, V. V.
TITLE: Synthesis and properties of heteroorganic polymers contain-
ing silicon, germanium, and tin in the backbone
SOURCE: Vysokomolekulyarnyya soedineniya, v. 7, no. 3, 1963,
427-431
TOPIC TAGS: organic semiconductor, semiconducting polymer, conju-
gated polymer, heteroorganic polymer
ABSTRACT: Organo-silicon, -germanium, and -tin conjugated polymers
have been prepared which contain double bonds alternating with
hetero atoms in the backbone. The compounds listed in Table 1 of the
Enclosure were polymerized in isopropyl alcohol or heptane solvent,
in the presence of chloroplatinic acid or benzoyl peroxide catalyst,
or without catalyst. Some of the properties of the polymers are
shown in Tables 1 and 2 of the Enclosure. The thermal stability of
the polymers decreased in the order $Si > Ge > Sn$ from 500-520 to 160°C.

Card 1/3

L 37718-65

ACCESSION NR: AP5008368

300—350C (temperatures of maximum volatile loss). Electrical measurements (Table 2 of the Enclosure), thermal stability data, and IR spectroscopy suggest that the d-orbitals of Si, Ge, and Sn participate in the chemical bond formation, so that these hetero atoms do not impair conjugation. Orig. art. has: 3 tables, 1 figure, and 1 formula. [SM]

ASSOCIATION: Institut elementoorganicheskikh soedineniy AN SSSR
(Institute of Organoelemental Compounds, AN SSSR)

SUBMITTED: 08May64

ENCL: 03

SUB CODE: OC, GC

NO REF SOV: 003

OTHER: 007

ATD PRESS: 3222

Card 2/5

SHABANOVA, A.G.; SLADKOV, A.M.; UVAROV, A.V.

Structure of aluminum alizarates. Zhur. fiz. khim. 39 no.6:
1442-1445 Je '65. (MIRA 18:11)

1. Submitted March 10, 1964.

L 13032-66 EWT(m)/EWP(j)/T RM

ACC NR: AP5028581

SOURCE CODE: UR/0076/65/039/01.1/2695/2700

AUTHOR: Gorshkova, G. N.; Chubarova, M. A.; Sladkov, A. M.; Luneva, L. K.; Kasatochkin, V. I.

ORG: Moscow Institute of Mineral Fuels (Moskovskiy institut goryuchikh iskopayemykh)

TITLE: Spectra of elemental-organic monomers and polymers containing double and triple bonds

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 11, 1965, 2695-2700

TOPIC TAGS: IR spectrum, UV spectrum, polymer, organosilicon compound, organotin compound, organogermanium compound, organomercury compound, organic phosphorus compound

ABSTRACT: IR and UV spectra were studied for monomeric silicon, germanium, mercury and phosphorus organic compounds and the IR spectra of related polymeric silicon, germanium and tin organic compounds with C=C and C≡C bonds. The IR spectra were taken using an IKS-14 spectrophotometer in the 4000-400 cm⁻¹ region on specimens in the form of pellets with KBr. The spectra of the three monomers containing phenylethynyl groups displayed C≡C valence vibration band. The position and the in-

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UDC: 543.42+547

L 13032-66

ACC NR: AP5028581

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tensity of this band was somewhat dependent on the element: dimethyl-di-(phenylethynyl)silane⁹ at 2159 cm^{-1} was very intense; ethyltri(phenylethynyl)germanium⁹ at 2160 cm^{-1} was less intense and di(phenylethynyl)mercury⁹ at 2139 cm^{-1} was of medium intensity. In diphenyldiethynyl silane, the $\text{C}\equiv\text{C}$ bond occurs in the 2030-2040 cm^{-1} region. This shows the effect of the benzene substituent on the position of the $\text{C}\equiv\text{C}$ bond. In the former three compounds the shift of the band toward the higher frequency region is caused by the shift of electrons from the nucleus to the $\text{C}\equiv$ bond and thus strengthening of the bond. Ultraviolet spectra were measured on an SF-4 instrument using cyclohexane as the solvent. An attempt is made to find the relationship between the position and the intensity of the principal maxima on the molecular structure and the nature of the element. Orig. art. has: 3 figures, 1 table.

SUB CODE: 07,20/ SUBM DATE: 22Jul62/ ORIG REF: 002/ OTH REF: 000

Card 2/2

L 27176-66 EWT(1)/T IJP(c)
ACC NR: AP6005397

SOURCE CODE: UR/0413/66/000/001/0152/0152

INVENTOR: Levina, F. A.; Myl'nikova, V. S.; Rybalko, G. I. Sidaravichyus, D. -I. B.;
Sladkov, A. M.; Terenin, A. N.

ORG: none

TITLE: Preparation of electrophotographic layers. Class 57, No. 169395

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 152

TOPIC TAGS: electrophotography, electrophotographic layer

ABSTRACT: An Author Certificate has been issued describing a method for making electrophotographic layers, using poly-N-vinylcarbazole as binder. To increase the sensitivity of the coating, organic photoelectric sensitive compounds such as metal polyacetylenes and acetylenides are added to the poly-N-vinylcarbazole. [LD]

SUB CODE: 11/ SUBM DATE: 27Jul63/

Card 1/1

ACC NR: AF6026355

SOURCE CODE: UR/0237/66/000/005/0027/0030

AUTHOR: Sidaravichyus, I.; Lavina, F. A.; Rybalko, G. I.; Sladkov, A. M.; Myl'nikov, V. S.; Kudryavtsev, Yu. P.; Ukhin, L. Yu.

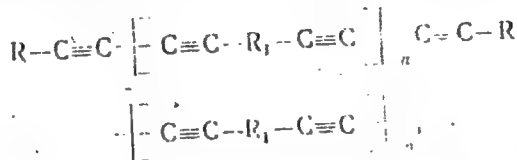
ORG: none

TITLE: Electrophotographic layers with photosemiconducting acetylenic polymeric compounds

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 5, 1966, 27-30

TOPIC TAGS: electrophotography, organic semiconductor, semiconducting polymer, copper compound, acetylene compound

ABSTRACT: The article reviews reported studies of new electrophotographic layers. Semiconducting organic polymeric compounds containing triple bonds in the conjugation chain (polyyenes) have been found to display a high photoelectric sensitivity and very short times of photoeffect relaxation. The structure of these compounds is



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UDC: 772.93

I 05702-67

ACC NR: AP6026355

pared from them. Authors are sincerely grateful to Academician A. N. Terenin for supervising the work. Orig. art. has: 1 table.

SUB CODE: 14/ SUM DATE: 01Nov65/ ORIG REF: 010/ OTH REF: 015

Card 3/3

L 30981-66

ACC NR: AP6009159

bromide with dihalo derivatives of organometallic compounds. IR spectra of all the compounds are interpreted. Orig. art. has: 1 figure, 2 tables.

SUB CODE: 07/ SUBM DATE: 08Jul64/ ORIG REF: 005/ OTH REF: 007

Card 2/2 *LC*

L 28456-66

ACC NR: AP6018060

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with 0.001° accuracy. The C_p value was accurate to 0.5%. For the purpose of comparison, C_p was also measured in Acheson graphite, C-3 domestic graphite, and acetylene black. Heat capacity was found to vary in the sequence: diamond¹⁵ < graphite¹⁵ < acetylene black < carbyne. Heat capacity of all nine carbyne samples was significantly higher than that of graphite, although different in each sample. This difference in C_p from one carbyne sample to another was correlated with the different ratio of the chain to lamellar structure, i.e., with partial cross-linking of carbon chains. The samples with highest C_p were assumed to have a low degree of cross-linking, therefore to be nearly linear carbon polymers, since the value of n in the formula $C_p = AT^n$ was nearly 1 for these samples. The n value for other samples was 1.2—1.5. Therefore, it was concluded that the products synthesized as described were different from graphite and had a lamellar-chain structure. Orig. art. has: 2 figures and 2 tables. [JK]

SUB CODE: 07/ SUBM DATE: 28Oct65/ ORIG REF: 012/ OTH REF: 007
ATD PRESS: 5005

Card 2/2 LC

SLADKOV, A. N.

Paleobotany

Identifying species *Lycopodium* L. and *Selaginella* Spring. by spores and micro-spores.
Trudy Inst. geog. AN SSSR, No. 50, 1951.

Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED.

1. SLADKOV, A. N.
2. USSR 600
4. Pollen
7. Forms of pollen grains of *Nitraria Schoberi*, Dokl. AN SSSR, 88, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

SLADKOV, A.N.

Morphological description of the pollen of Pyrolaceae, Monotropaceae, Ericaceae, Vacciniaceae, and Empetraceae in European U.S.S.R. Trudy Inst.geol. 61:119-156 '54. (MLRA 8:2)
(Pollen, Fossil)

SLADKOV, A.N.

Morphological description of the pollen of Zygophyllaceae of
Turkmenia. Trudy Inst.geol. 61:157-167 '54. (MLRA 8:2)
(Turkmenistan--Pollen, Fossil)

SLADKOV, A. N.

USSR/ Biology - Plant Morphology

Card 1/1 Pub. 22 - 42/45

Authors : Sladkov, A. N.

Title : Morphological symptoms of spores of snake fern growing in the USSR

Periodical : Dok. AN SSSR 103/2, 329-332, Jul 11, 1955

Abstract : Scientific data are presented on the morphology of spores of snake fern growing in the USSR. Six references: 4 USSR, 1 USA and 1 Germ. (1902-1953). Drawings.

Institution : Ministry of Geology and Protec. of Mineral Resources of the USSR, All-Union Aerological Trust

Presented by : Academician V. N. Sukachev, February 3, 1955

SLADKOV, A.N.

Polymorphism of spores in *Pteris cretica* L. Dokl. AN SSSR 117
no.5:900-903 D '57. (MIRA 11:3)

1. Vsesoyuznyy aerogeologicheskiy trest Ministerstva geologii i
okhrany neдр SSSR. Predstavleno akademikom V.N.Sukachevym.
(Ferns) (Spores (Botany)

SLADKOV, A.N.

SLADKOV, A.N.

Concerning the spore-pollen method. Razved. i okh. nedr 23 no.9:

11-16 3 '57.

(MIRA 10:11)

(Vagt) (Palynology)

20-127-5-49/54

AUTHOR: Sladkov, A. N.
 TITLE: The Polymorphism of Spores in Pteris cretica. (Polimorfizm spor
 u pterisa kritskogo)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp.900 - 903 (USSR)

ABSTRACT:

The author met the mentioned phenomenon during the preliminary works for the working out of a determination table for the spore-pollen-analysis. Pteris cretica occurs in the USSR only in Kolchida and Talysh (Kavkaz). Numerous other species of the genus Pteris occur mainly in the tropics. The Pteris spores are easily to be distinguished from the spores of other ferns of the USSR (figure 1). A description of the typical Pteris spores follows. Besides typical spores with a three-radiate gap also spores of bilateral construction with single-radiate and with four-radiate gap were found together with transition forms (figure 2). Abnormal spore forms of ferns are known in the references (reference 1, 4-6). In all herbarium examples of Pteris cretica which were at the author's disposal in small quantities spores were found with single- and four-radiate gap. The transitions between the single types of gap and the supposed ways of formation of these types are described. The spore polymorphism of Pteris cretica can apparently be connected

Card 1/2

SIADKOV, A.N.

Studies on the morphology of pollen and spores of modern plants
for spore-pollen analysis in the U.S.S.R. Razved. i okh.nedr
24 no.10:1-4 0 '58. (MIRA 12:2)

1. Aerogeologicheskii trest.
(Palynology)

SLADKOV, A.N.

Spores of adder's tongue species occurring in the U.S.S.R. Biul.
MOIP. Otd. biol. 64 no.2:97-111 Mr-Apr '59. (MIRA 12:10)
(Adder's tongue) (Spores (Botany))

17(4)

AUTHOR:

Sladkov, A. N.

SOV/20-125-1-61/67

TITLE:

On the Morphological Characteristics of the Spores of Real Ferns of the Subfamily of Pterideae Diels of the USSR Flora
(O morfologicheskikh priznakakh spor vlastyashchikh paprotnikov podsemeystva Pterideae Diels flory SSSR)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol. 145, Nr 3, pp 219-222
(USSR)

ABSTRACT:

In the introduction the author summarizes the distribution and the existence in the USSR of the subfamily as mentioned in the title. Its spores appear scarcely and in small number in the spore-pollen-analyses of the quaternary. Determining them, yields, however, valuable data for the interpretation of the results of analyses. The morphology of the more recent types is also of importance for the investigation of the fossil spores of older sediments. The spores used for the production of standard-preparations originate from herbarium-exsiccates in botanic institutes of Moscow, Leningrad, Baku, the Guinea and of the Sakhalin (sent by I. I. Karyagin, L. A. Privalov and A. I. Tolmachev). They were treated with alkalies by means of acetolysis. The spores investigated developed in tetrahedral

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On the Morphological Characteristics of the Spores
of Real Ferns of the Subfamily of Pterideae Diels
of the USSR Flora

SOV/20-125-1-61/67

tetrads. They have 4 spores each. In the following they are described. The spores were schematically drawn in various positions (Fig 1). Spores of real ferns have 2 shells, formed by the spore protoplasts: a) exosporium - a solid one preserved in the case of petrification and b) endosporium which gets lost in fossil spores and which is attached to the first of the two shells from inside. Publications diverge as to the existence of perispore - a third shell in individual types of ferns (also called epispora; references 2, 4, 8). The author delivers a comprehensive discussion on the classification and synonymy of the spore-shells (Refs 2-7, 9, 10). The investigations carried out by the author showed that in the case of pteridiacean types which are dealt with in the present paper (with the exception of Cryptogramma-types) the outer shell may either completely or partly be abandoned. Henceforward the author calls such shells perispores. On the whole his observations agree with reference 4, which were not enough considered by E. Hanning (Khanning, Ref 5, 6) according to the author's opinion. According to the morphological characteristics of the

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On the Morphological Characteristics of the Spores
of Real Ferns of the Subfamily of Pterideae-Diele
of the USSR Flora

SOV/20 225 1 61/67

exospore and the perispore the author classifies the spores
among the following groups: I. exospore with sculpture
perispore covers as a thin smooth shell all sculpture
formations (Figs 2, 11). A clear equatorial torus exists.
II. exospore with smooth surface. Perispore foliated, coarse or
fine textured (Figs 2, 11, 12). III. exospore with sculpture,
no perispore (Figs 2, 11). Finally, the problems of the origin
of individual expressions used (R-Rs 2, 3, 10) are discussed.
There are 2 figures and 10 references, 2 of which are Soviet.

ASSOCIATION: Vsesoyuznyy aerogeologicheskoy trust Ministerstva geologii
i tektoniki SSSR (All Union Aerogeological Trust of the
Ministry of Geology and Conservation of Mineral Resources, USSR)

PRESENTED: October 5, 1958 by V. N. Sukachev Academician

SUBMITTED: October 5, 1958

Card 3/3

17(4)
AUTHOR:

Sladkov, A. N.

SOV/20-125-2-50/64

TITLE:

On the Morphological Similarity and Dissimilarity in the Spores of Cryptogramma R. Br. and Botrychium Sw. Species of the Flora of the USSR (O morfologicheskom skhodstve i razlichii spor vidov Cryptogramma R. Br i Botrychium Sw. flory SSSR)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 414-416 (USSR)

ABSTRACT:

Comparative morphological investigations of Recent material of spores are now particularly required in view of the increasing necessity of determining the genera and species of fossil pollen grains and spores as precisely as possible. The dissimilarities in the species within one genus often are insignificant, while sometimes distantly allied pollen grains and spores may be similar to one another. Such a similarity was found by the author between the two fern species mentioned in the title, which belong to 2 different families (Polypodiaceae and Ophioglossaceae). The species differ in ecology, but the species of both genera are found in the same regions. There might be a common presence of fossil spores.

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On the Morphological Similarity and Dissimilarity in SOV/20-125-2-50/64
the Spores of Cryptogramma R. Br. and Botrychium Sw. Species of the Flora
of the USSR

The separation and separate classification of the spores of these 2 genera is desired and depends on the determination of constant morphological dissimilarities. In spite of considerable similarity a determination of the generic classification of these spores is possible. Table 1 indicates that Botrychium spores in general are smaller than Cryptogramma spores, a fact that is insufficient, however, for determining the generic classification. The size of spores may be used only as an additional feature. The principal indicative features are the whole character of the Exosporium on the proximal spore side and the relative size of prominences on the surface of this side (Fig 2). There are 2 figures, 1 table, and 2 Soviet references.

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On the Morphological Similarity and Dissimilarity in SOV/20-125-2-50/64
the Spores of Cryptogramma R. Br. and Botrychium Sw. Species of the Flora
of the USSR

ASSOCIATION: Vsesoyuznyy aerogeologicheskiy trest Ministerstva geologii i
okhrany nedr SSSR (All-Union Aerogeological Trust of the Minis-
try of Geology and Protection of Mineral Resources, USSR)

PRESENTED: October 6, 1958, by V. N. Sukachev, Academician

SUBMITTED: October 6, 1958

Card 3/3

SLANKOV, A. N., Cand Biol Sci (diss) -- "The morphology of pollen and spores of contemporary plants of the USSR in connection with methods of its practical application". Moscow, 1960. 20 pp (Moscow Order of Lenin and Order of Labor Red Banner State U im M. V. Lomonosov, Soil-Biol Faculty), 200 copies (KL, No 11, 1960, 131)

SLADKOV, A.N.

Spores of *Microlepia* Presl. species in the flora of the U.S.S.R.
Nauch.dokl.vys.shkoly: biol.nauki no.4:117-120 '60. (MIRA 13:11)

1. Rekomendovana kafedroy vysshikh rasteniy Moskovskogo gosudar-
stvennogo universiteta im. M.V.Lomonosova.

(FERNS)

(SPORES (BOTANY))

SLADKOV, A.N.

Clearness of spore and pollen diagrams. Vest. Mosk. un. Ser. 6:
Biol., pochv. 15 no.4:32-37 J1-Ag '60. (MIRA 13:10)

1. Kafedra vysshikh rasteniy Moskovskogo universiteta.
(Palynology)

SLADKOV, A.N.

Spores of true ferns of the subfamily Pteridae Diels in the flora of the U.S.S.R. Report No.3: Series Pteridae - Adiantinae and Pteridae - Pteridinae. Nauch. dokl. vys. shkoly; biol. nauki no.3:112-119 '61. (MIRA 14:7)

1. Rekomendovana kafedroy vysshikh rasteniy Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(FERNS) (SPORES (BOTANY))

SLADKOV, A.N.

Spores of the real ferns of the subfamily Pterideae Diels of the
U.S.S.R. flora. Report No. 1. Range Pterideae + Gymnogramminae.
Vest. Mosk. un. Ser. 6: Biol., pochv. 16 no.6:45-52 N-D '61.
(MIRA 15:1)

1. Kafedra vysshikh rasteniy Moskovskogo universiteta.
(Ferns)

SLADKOV, A.N.

Guide for the identification of the spores of true ferns of
the subfamily Pterideae Diels in the flora of the U. S. R.
Nauch. dokl. vys. shkoly; biol. nauki no.1:129-134 '62. (MIRA 15:3)

1. Rekomendovana kafedroy vysshikh rasteniy Moskovskogo
gosudarstvennogo universiteta im. M.V. Lomonosova.

(FERNS)

(SPORES (BOTANY))

SLADKOV, A.N.

Spores of true ferns of the subfamily Pterideae Diels found in
the U.S.S.R. Report No. 2. Series Pterideae-Cheilanthes.
Vest. Mosk. un. Ser. 6: Biol., pochv. 17 no.4:48-59 J1-Ag '62.
(MIRA 15:9)

1. Kafedra vysshikh rasteniy Moskovskogo universiteta.
(Spores (Botany)) (Ferns)

SLADKOV, A.N.

Spore tetrads in pteridophytes. Dokl. AN SSSR 143 no.2:464-
466 Mr '62. (MIRA 15:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom V.N.Sukachevym.
(Pteridophyta)
(Spores(Botany))

SLADKOV, A.N.

Polar axes of spores and the moving apart of nuclei during meiosis
in tetrads of different types in peridophytes. Dokl AN SSSR
146 no.1:225-228 S '62. (MIRA 15:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Predstavleno akademikom V.N. Sukachevym.
(Pteridophyta) (Botany—Embryology)

SLADKOV, A.N.

Morphographical classification of pollen and spores (based on the
works of G. Erdtman). Nauch. dokl. vys. shkoly; biol. nauki no.3:
104-111 '63. (MIRA 16:9)
(Pollen--Morphology) (Spores (Botany))

SLADKOV, A. N.

"On the tetrads and hexads of spores."

report submitted for 10th Intl Botanical Cong, Edinburgh, 3-12 Aug 64.

Moscow State Univ.